

Deployment of EVs in the Federal Fleet

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy



The Parker Ranch installation in Hawaii


FUPWG

Rapid City, South Dakota
October 20th, 2010

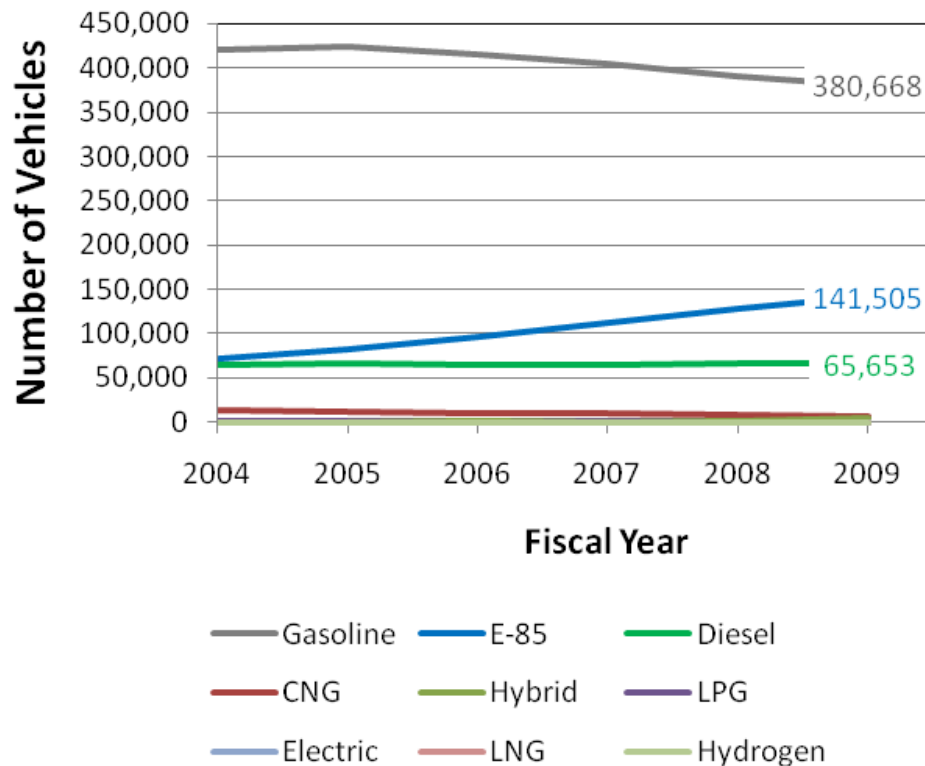
Amanda Sahl
Federal Energy Management Program



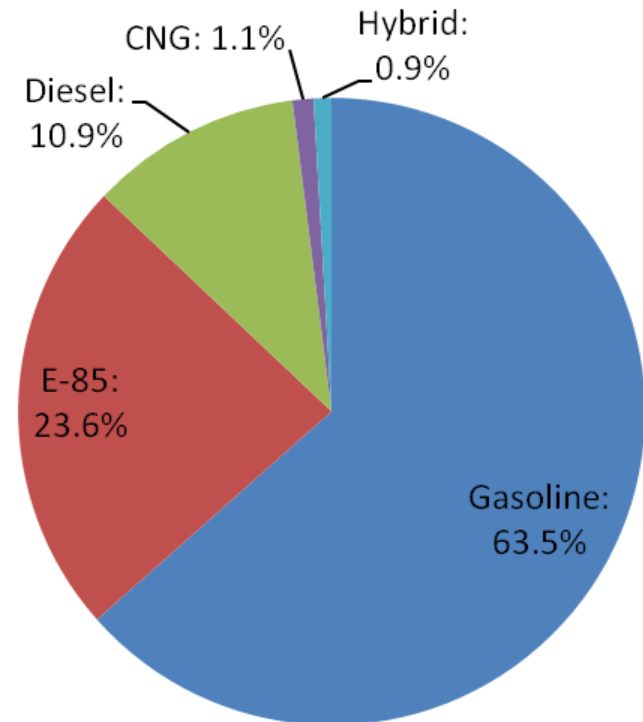
FEMP facilitates the Federal Government's implementation of sound, cost-effective energy management and investment practices to enhance the nation's energy security and environmental stewardship.

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- Overview of the Federal Fleet
 - Infrastructure Requirements
 - Current implementation and activity
 - Ongoing barriers and questions

Fed Fleet Inventories







2009 Fed Fleet Inventory



Source: fastweb.inel.gov

EO Covered Agency = "Yes"; Complete Inventory

	<i>Requirement</i>	<i>Performance</i>
<i>EPAct 92</i> Acquisitions	75% of “covered” Light-Duty Vehicle acquisitions must be AFVs	 172 percent
<i>EPAct 05</i> AF Use in AFVs	95% of fuel used in non-waivered dual-fueled AFVs must be alternative fuel	 37 percent
<i>EO 13423</i> Petroleum Reduction	Reduce annual petroleum use by 2% each year from FY05 baseline (8% in FY09)	 1.7 percent <u>increase</u>
<i>EO 13423</i> Alternative Fuel Use	Increase alternative fuel use by 10% from previous year starting from FY05 baseline (46% in FY09)	 85 percent Alternative fuel only 3.3% of total fuel use

Executive Order 13514

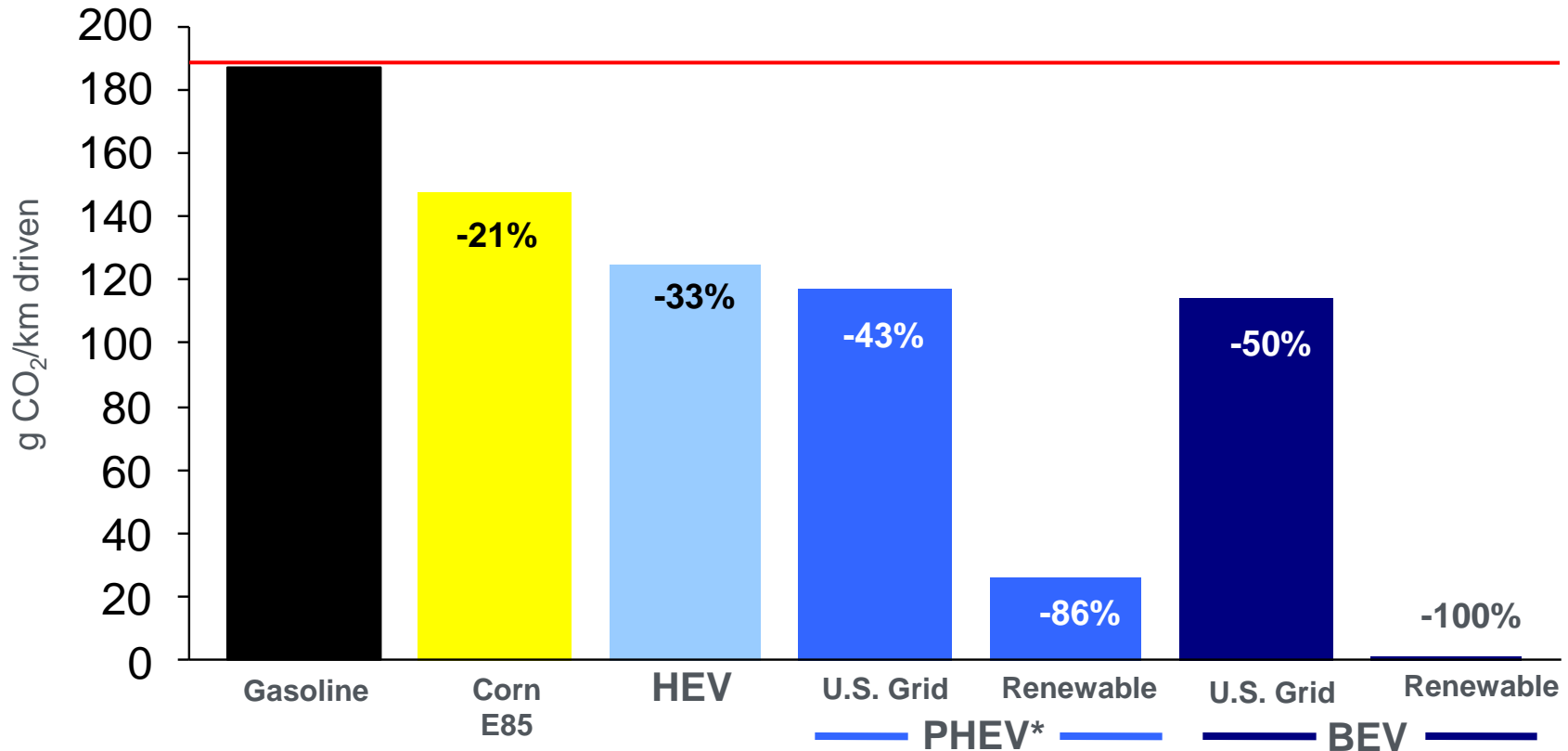
Federal Leadership in Environmental, Energy, and Economic Performance



- Signed on October 5, 2009
- Establishes “integrated agency strategy for sustainability, **including reducing GHG emissions**, within the Federal government”
- “To **lead by example** and achieve a clean energy economy”

Potential benefits – *GHG emission reductions*

CO₂ emissions

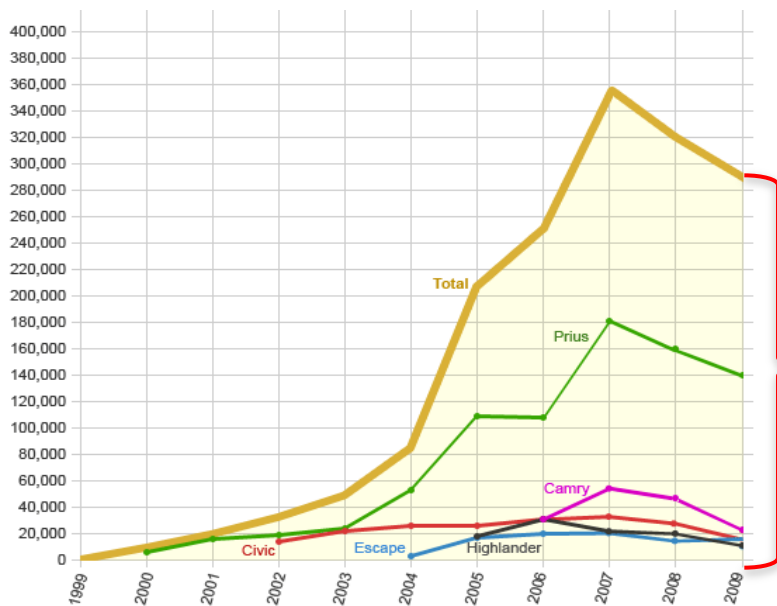


Source: Ford October 2009, <http://www.ford.com/microsites/sustainability-report-2008-09/issues-climate-case-electrification-challenges#wtw>

* PHEV emissions assume a 25% of duty cycle is ICE drive, 75% of duty cycle is electric drive

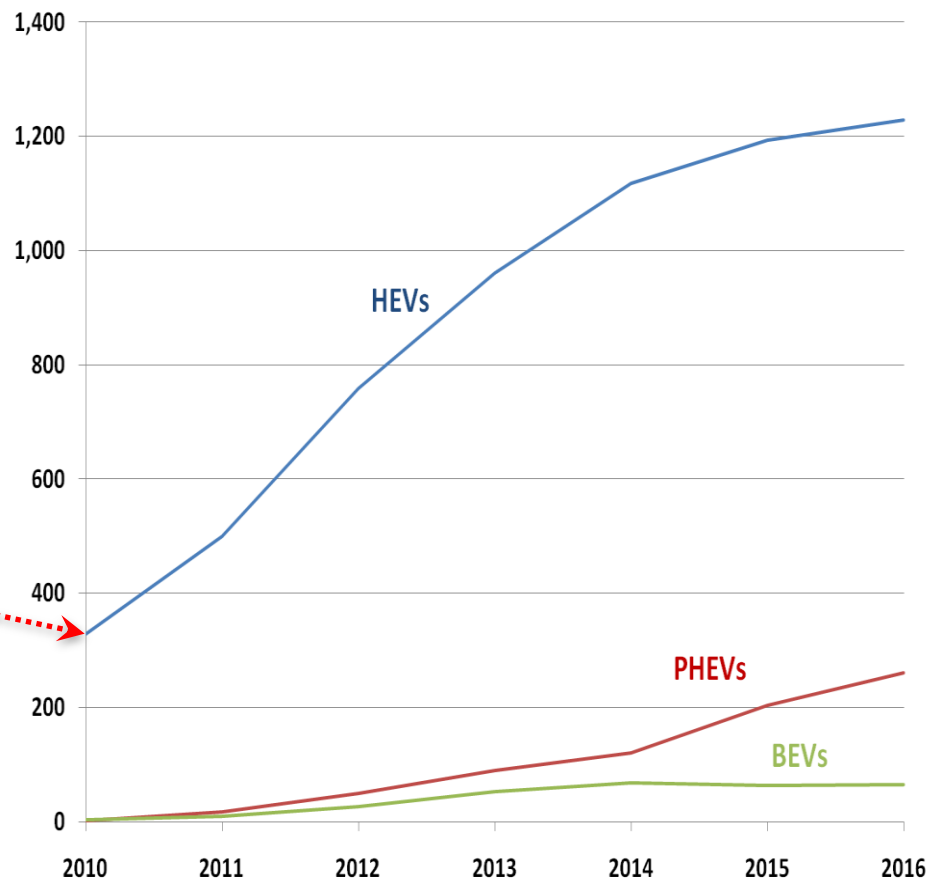
Electric vehicle market - current and projected

U.S. HEV HISTORICAL SALES (1999 - 2009)




Source: Hybridcars.com Hybrid Market Dashboard

U.S. ELECTRIC VEHICLE PROJECTED MARKET



Sources: J.D. Power Forecasting, Pike Research

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- Overview of the Federal Fleet
 - Infrastructure Requirements
 - Infrastructure basics
 - Federal infrastructure needs
 - Current implementation and activity
 - Ongoing barriers and questions

Level I – 120V

Regular home outlet

15-20+ hrs to charge

Best for PHEVs with 10 to 20 mile range



Level II – 240V

Used in homes for dryers and electric ranges; simple install

4-6 hrs to charge

Best for PHEVs with 20 to 40 mile range



Level III – 480?V

Standards not set; DC charging

15-30 minutes to charge

Best for 'fueling stations' and easing range anxiety



Battery Swapping

Requires standardized battery packs and vehicles

2-15 minutes to swap

Best for 'fueling stations' and easing range anxiety



Both facilities and fleets should report the electricity used by EVs; EVs will be treated like a sub-meter

User Authentication

- **Use key fob/credit card system for authentication**
- Allows employees to charge when station is available
- Public safety – de-energized

Usage monitoring

- **Measure electricity usage by vehicle**
- **Ability to separate fleet electricity use from facility use**
- Ability to separate out employee use

Real-time control


- Safety Features - *GFCI*
Overcurrent, Plug-out
- **Load management/ grid-friendly programs (Demand Response Plans, Off-Peak Plans, etc)**
- Station monitoring

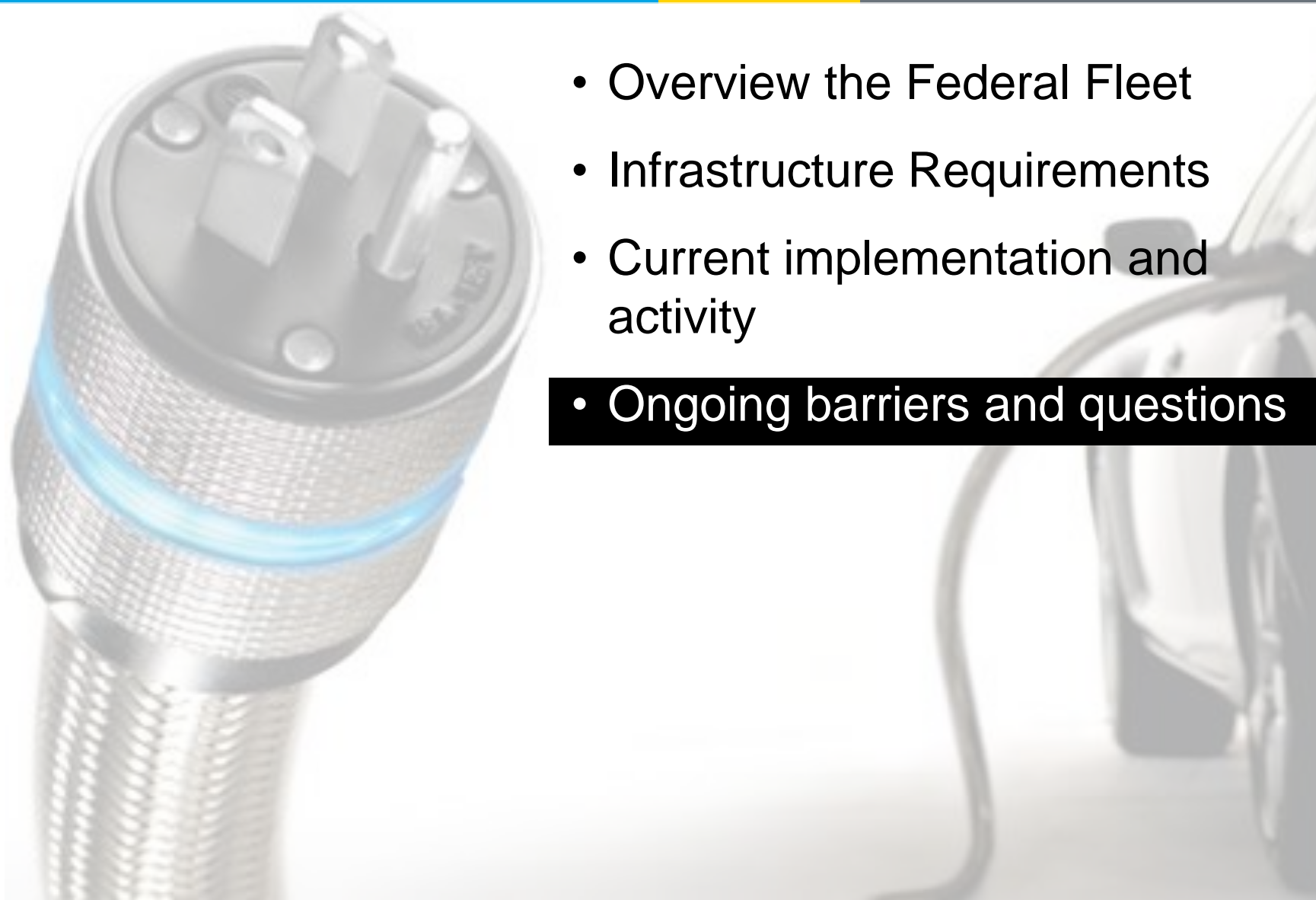


Costs

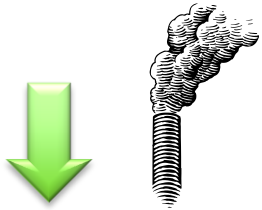
Equipment: **\$350 – \$5,000**

Installation: **\$150 – \$10,000**

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- Overview of the Federal Fleet
 - Infrastructure Requirements
 - Current implementation and activity
 - Federal Fleet Management Handbook
 - AFDC information resource
 - GSA pilot program for vehicles
 - GSA schedule 23V for EVSE suppliers
 - Federal policies
 - Ongoing barriers and questions

- 
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Opportunities



GHG emissions



Petroleum use



Support market development



Lead by example

Barriers



Cost



Limited availability



Org. Resistance



Cooperation with Facility Managers



Employee charging policies

- What level of charging?
- **What are the permitting requirements?**
- Can employees charge?
- **Does the utility require additional electrical infrastructure (e.g., certified meter)?**
- What kind of metering/billing?
- **Who will pay for electrical infrastructure upgrades?**
- Who will install the station?
- **Who will pay for the infrastructure (third party? facility group? fleet group?)**
- **Will there be an EV-specific rate established?**
- **Should peak charging be avoided? How?**

Thank You!

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www.eere.energy.gov/femp/program/fedfleet_management.html